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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,784	05/29/2001	Tinku Acharya	42390P11707	7730

8791 7590 12/05/2003

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EXAMINER

SENF1, BEHROOZ M

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

TS

Office Action Summary

Application No.

09/867,784

Applicant(s)

ACHARYA ET AL.

Examiner

Behrooz Senfi

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-18, 22-24, 30-34 is/are allowed.
- 6) ☒ Claim(s) 1-9, 19-21 and 25-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,5,7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because, the purpose of the abstract is to enable the patent and trademark office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure.

Correction is required. See MPEP § 608.01(b).

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 – 9, 19 – 21 and 25 - 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michael Weeks et al. and Lynch et al. (US 6,381,280).

Regarding claim 1, Michael Weeks discloses the claimed “applying a three dimensional discrete wavelet transformation (DWT) to plurality of video images, comprising frames, rows and columns” (abstract), and “producing a plurality of blocks of DWT coefficients by respectively and successively filtering along a sequence of frames and sequence of columns and a sequence of rows, and after applying filter operation, sub-sampling the result of the filter operation” (fig. 1, filtering process, and down-sampling).

Michael Weeks fails to explicitly teach the claimed “zero tree compression coding”. However, such techniques are well known and used as evidenced by in the Lynch ‘280 (fig. 10, col. 2, lines 66 – col. 3, lines 8). Therefore, taking the combined teaching of Michael Weeks and Lynch ‘280 as a whole, it would have been obvious to take advantage of the benefits provided by zero-tree compression techniques for video and image encoding (col. 3, lines 10 – 15). Doing so would provide compression techniques for video and image implemented in hardware of modest size and very low cost.

Regarding claims 2 - 4, 7 - 9, 20, 21 and 27 – 29, combination of Michael Weeks and Lynch ‘280 teaches “dropping frames, alternate columns and rows after filter operation” (page 59, left column, lines 14 – 16 of Weeks et al), and the claimed “8

blocks” (page 59, left column, lines 17+ of Weeks et al), and “high pass and low pass filtering” (fig. 4 of Weeks et al).

Regarding claim 5, the limitations claimed are substantially similar to claim 1, therefore the grounds for rejecting claim 1, also apply here. Furthermore, as for the claimed “integrated circuit” please see (col. 4, lines 64 of Lynch ‘280).

Regarding claims 6 and 26, combination of Michael Weeks and Lynch ‘280 teaches the claimed “integrated circuit architecture comprises at least one of the: hardware, firmware, and any combination thereof” (col. 6, lines 62+ of Lynch ‘280).

Regarding claims 19 and 25, the limitations claimed are substantially similar to claim 1, therefore, the grounds for rejecting claim 1, also apply here. Furthermore, as for the claimed “storage medium” please see (fig. 12 of Lynch ‘280).

Allowable Subject Matter

5. Claims 10 – 18 and 22 – 24, and 30 – 34 are allowed over the prior art of the record.
6. The following is an examiner's statement of reasons for allowance: the claim invention as recited in the independent claims 10, 14, 22 and 30, requires limitations of “an inverse process of three-dimensional discrete wavelet transformation comprising: applying a bit-based conditional decoding to the embedded zero tree encoded DWT coefficients of the block, and up-sampling respective sub-blocks of the DWT coefficient matrix by row, column and frame, and filtering and combining one or more respective pairs of up-sampled sub-blocks to produce an up-sampled sub-block corresponding to each respective pair, and reapplying filtering and combining one or more respective

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pairs of up-sampled sub-blocks to produce an up-sampled sub-block to any produced up-sampled sub-block pairs until one up-sampled sub-block remains, and multiplying the one remaining up-sampled sub-block by eight to produce a block at the next higher resolution". The prior art of the record fails to anticipate or rendered obvious the novelty point as cited above.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Behrooz Senfi** whose telephone number is **(703)305-0132**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Chris Kelley** can be reached on **(703)305-4856**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal


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Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relative to the status of the application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

B. S. B. S.

11/25/2003


CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600